

Annex 3 to Invitation to Bid and Sale Specifications
No. EMSA/SALE/01/2014
Public Sale of oil/water separators

Technical Report

Disclaimer

Any specifications and/or graphic material must not be understood as a commercial endorsement by the Agency of any given piece of equipment and/or manufacturer/supplier.

If there is a contradiction between the Report and the manufacturers' manuals, the manufacturers' manuals take precedence.

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1. LOT 1: STETFIELD 3SEP 96 m³/h

1.1 Technical description and general arrangement

Manufacturer:

Stetfield Separators Limited

Parkengue

Kernick Industrial Estate

Penryn, Cornwall TR10 9EP

United Kingdom

Tel: +44 (0)1326 562635

Fax: +44 (0)1326 563316

E-mail: sales@stetfield.com

Web-Site: www.stetfield.com

Purchase year: 2006

The separation plant is divided in two sections in order to remove residual free oils from oil spills at sea involving a variety of oils.

The main equipment comprises a Stetcone first stage, designed to remove Heavy Fuel Oils (HFO), followed by a second-stage coalescer system to remove residual oil droplets to >20 μ in order to achieve a 15ppm consent on free-oils.



The oil water monitor (ODME) to measure the content of oil in water is not included in the equipment set.

Technical details:

Type:	3SEP 96m ³ /h
Length:	7m
Width:	2,5m
Height	4 m

1.2 Components

N°	COMPONENT	Component included Yes/No
1	Frame	yes
2	Anode protection	no
3	Tanks	no
4	Corrugated plates	no
5	Coalescer cartridge	yes
6	Flexible hoses	no
7	Steel pipes	no
8	Oil hoses	no
9	Pumps	no
10	Control panel	no
11	Electric cables	no
12	Hydraulic hoses	no
13	Pump power source	no
14	Filter	no
15	Valves	no
16	Flanges	no
17	Oleometer	no

1.3 Equipment status assessment

This equipment is reported not be functional since it is not complete with all the necessary components.

2. LOT 2: SRC 100 SLANT RIB OWS 23 m³/h

2.1 Technical description and general arrangement

Manufacturer:

Parkson Corporation
2001 Waldorf Street NW
Grand Rapids, MI 49544,
USA
Tel: 616 791 9100
Fax: 616 453 1832
E-mail: technology@parkson.com
Web-Site: www.parkson.com

Purchase year: 2007

The Slant Rib Coalescing Oil/Water Separator is designed and sized to remove all non- emulsified oil from the oil/water mixture stream.

The main elements of the separator are: Inlet Chamber, Oil Separation Chamber, Oil Reservoir, Sludge Chamber, Clean Water Chamber, piping, covers and hatches.

The separation process is automatic and incorporates the use of uniquely designed slant rib, sinusoidal, oleophilic coalescing plates.



The oil water monitor (ODME) to measure the content of oil in water is not included in the equipment set.

Technical details:

Type:	Slant Rib Coalescing Oil/Water Separator
Capacity:	23 m ³ /h
Height:	234 cm
Length:	254 cm
Width:	104 cm
Weight empty:	1210 kg
Weight operational:	5012 kg

2.2 Components

N°	COMPONENT	Component included Yes/No
1	Frame	yes
2	Anode protection	no
3	Tanks	yes
4	Corrugated plates	no
5	Coalescer cartridge	no
6	Flexible hoses	no
7	Steel pipes	no
8	Oil hoses	no
9	Pumps	no
10	Control panel	no
11	Electric cables	no
112	Hydraulic hoses	no
13	Pump power source	no
14	Filter	no
15	Valves	yes
16	Flanges	yes
17	Oleometer	no

2.3 Equipment status assessment

The equipment was never used for oil recovery operations. This was regularly maintained and is reported to be functional.

LOTS 3&4: JOWA 3SEP OWS-10m³/h

3.1 Technical description and general arrangement

Manufacturer:

Jowa AB
Tulebovägen 104
S-428 34, Kallered, Gothenburg
Sweden
Phone: +46 31 726 54 00
Fax: +46 31 795 45 40
Email: info@jowa.se
Web-Site: www.jowa.se

Purchase year: 2007

Technical details:

Capacity:	10 m ³ /h
Influent:	Bilge water
Effluent oil content:	<15 ppm according to IMO MEPC 107(49)
Operational temperature:	5-55 °C
Operational pressure:	Normal 0-2 bar, max 4 bar
Volume total of the arrangement:	2000 L
Weight excl. filter material and pump:	850 kg (dry), 2850 kg (wet)
Total power consumption:	3 kW
Air supply:	4-6 bar
Tank material:	Stainless steel AISI 316L
Gaskets:	Nitrile
Tank volumes:	1x500 l, 2x750 l
Filter media:	JOWA F200
Filter media quantity:	500 kg
Type approval:	DNV CERTIFICATE P-11800
Safety valve (Durgo 4 bar):	4155DN32
<u>Bilge pump</u>	Axflow pump CB 041
Flow rate:	10 m ³ /h
Weight:	82 kg
Suction:	Max 4.5 m lift capacity
Electrical data	
Voltage:	380-440 VAC
Frequency:	50/60 Hz
Power consumption:	2.2/2.6 kW-4.7/4.4 A
R.P.M.:	1410/1716
Protection class:	IP55
<u>15 ppm bilge alarm:</u>	RTE/DECKMA
Piping connections	
Oily water inlet:	1 ½" – DN40
Oil release of water to storage tanks:	1 ½" – DN40
Back wash water inlet:	1" – DN 25
Water outlet (overboard):	1 ½" – DN40
Drain and re-circulated water:	1 ½" – DN40
Outlet to Jowa EBU	1 ½" – DN40

The Jowa 3SEP OWS is an oily bilge water separator in accordance with IMO MEPC 107(49). The treated water released by the 3SEP OWS contains no more than 15 ppm oil in water. The system is designed for a continuous flow with automatic operation and does not require any chemicals.

The Jowa 3SEP OWS is a dual stage oily bilge water separation system utilizing differential specific gravity, coalescence plates and filtration to separate and remove free and emulsified oil.

The system is designed as a skid assembly with all connection points collected, for easy installation onboard, which consists in connecting water inlets and outlets and the electrical power supply. All equipment is made from the highest quality materials; the tanks are made from stainless steel, AISI 316L. The capacity of the equipment is 10 m³/h.

The operation of the system is divided into two separate stage.

The first stage removes free oil by gravity with the help of coalescence plates.

An adjustable oil sensor controls the valve for automatic oil release to the storage tank. The amount of treatable water released to the storage tank is minimised.

In the second stage the emulsified oil is removed in the two filter tanks. The ppm value is monitored by a 15 ppm bilge alarm. When a 15 ppm alarm occurs, the Jowa 3SEP will automatically close the overboard line and re-circulate the treatable water. When the contamination falls below 15 ppm the valve for overboard release will open again automatically.

The Jowa 3SEP is delivered complete with all valves, pipes, necessary fittings and an oil content meter mounted on a single skid, ready for installation onboard. The installation on board a vessel should be on a plane surface and welded or bolted using the pre drilled holes in the skid. A minimum working space of 500 mm should be left in front of the unit.



3.2 Components

N°	COMPONENT	Component included Yes/No
1	Frame	yes
2	Anode protection	yes
3	Tanks	yes
4	Corrugated plates	yes
5	Coalescer cartridge	yes
6	Flexible hoses	no
7	Steel pipes	yes
8	Oil hoses	no
9	Pumps	no
10	Control panel	yes
11	Electric cables	yes
12	Hydraulic hoses	no
13	Pump power source	no
14	Filter	no
15	Valves	yes
16	Flanges	yes
17	Oleometer	yes

3.3 Equipment status assessment

The equipment was never used for oil recovery operations. This was regularly maintained and is reported to be functional.

3. LOTS 5&6: STETFIELD 3SEP 15 m3/h

4.1 Technical description and general arrangement

Manufacturer: Stetfield Separators Limited
Parkengue
Kernick Industrial Estate
Penryn, Cornwall TR10 9EP
United Kingdom
Tel: +44 (0)1326 562635
Fax: +44 (0)1326 563316
E-mail: sales@stetfield.com
Web-Site: www.stetfield.com

Purchase year: 2006

Technical details:

Capacity:	15 m ³ /h
Influent:	Oil-water mixture
Effluent oil content:	<15 ppm acc.
Operational temperature:	
Operational pressure:	1.38-2.4 Bar
Volume total of the arrangement:	2000L
Weight excl. filter material and pump:	6000 kg (dry) 11000 kg (wet)
Air supply:	5.5 Bar
Tank material:	Stainless steel AISI 316L
Gaskets:	Nitrile
Tank volumes:	1x500l, 2x750L
Filter media:	JOWA F200
Filter media quantity:	500 kg
Type approval:	DNV CERTIFICATE P-11800
Safety valve (Durgo 4 bar):	4155DN32
<u>15 ppm bilge alarm:</u>	
Piping connections	
Oily water inlet:	3"
Oil release of water to storage tanks:	3"
Back wash water inlet:	3"
Water outlet (overboard):	3"
Drain and re-circulated water:	3"

The system comprises two sets with three-tanks. Each of one includes the following items:

1. Stetcone coalescer separator system
2. Oil in water monitor Deckma OMD-2005
3. Pressurized enclosure system F 850 for the operation of Oil discharge monitor in hazardous areas.

One set is to be installed on vessels starboard side and the other on port side.

The system is designed as a skid assembly with all connection points collected, for easy installation. When the unit reaches the customer the only remaining thing to do is to connect water inlets and outlets and the electrical power supply, facilitating quick and easy installation onboard. All equipment has the highest quality; the tanks are made of mild steel finished with epoxy paint for corrosion prevention. The capacity of each separator set is 15 m³/h.

The Stetfield stetcone is delivered complete with all valves, pipes, necessary fittings and an oil content meter mounted on a single skid, ready for installation onboard. The placement on board should be on a plane surface and welded or bolted using the pre drilled holes in the skid. A minimum working space of 500 mm should be left in front of the unit.

The Stetfield separation plant is a dual stage oil-water separation system utilizing differential specific gravity (first stage) and coalescence plates (second stage) to separate and remove free and emulsified oil. This system is specifically designed to remove residual free oils from oil spills when performing the pollution response at sea.

The main equipment comprises a Stetcone first stage, designed to remove heavy fuel oils (HFO) by gravity, followed by a second-stage coalescer system to remove residual oil droplets to >20µ in order to achieve a oil content in the water of no more than 15-ppm in order to be acceptable to be released over board. Should the ppm reading is above the set level, the system will direct throughout an automatic controlled valve the oily water back to the storage tanks. The amount of treatable water released to the storage tank is minimised.

As the skids are designated for operation in Eexd zone, the oil discharge monitor (integrating part of the separator systems) is installed inside an air purged enclosure. It is essential that a compressed air supply is continuously connected to this enclosure to prevent the formation of any explosive mixture around the internal components. If the air supply is lost, the system will shut down into safe mode. The minimum air pressure inside the enclosure is 0,8 mbar.



4.2 Components

N°	COMPONENT	Component included Yes/No
1	Frame	yes
2	Anode protection	yes
3	Tanks	yes
4	Corrugated plates	yes
5	Coalescer cartridge	yes
6	Flexible hoses	yes
7	Steel pipes	yes
8	Oil hoses	yes
9	Pumps	yes
10	Control panel	yes
11	Electric cables	yes
12	Hydraulic hoses	yes
13	Pump power source	yes
14	Filter	yes
15	Valves	yes
16	Flanges	yes
17	Oleometer	yes

4.3 Equipment status assessment

The equipment was never used for oil recovery operations. This was regularly maintained and is reported to be functional.